Pakistan Journal of Multidisciplinary Innovation (PJMI)

ISSN Print: 2957-501X
ISSN Online: 2957-5028
Volume 3, Number 2, 2024, Pages 20 – 27
Journal Home Page
https://journals.airsd.org/index.php/pjmi

Analysis of Clinical Competencies in Vital Signs Monitoring Among BSN Students at Isra University, Hyderabad: Focusing on Knowledge, Skills, and Attitudes

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ARTICLE INFO

Article History:

Received:	October 15, 2024
Revised:	October 27, 2024
Accepted:	November 6, 2024
Available Online:	November 17, 2024

Keywords:

Vital signs monitoring, clinical competency, nursing students, knowledge, skills, attitudes

ABSTRACT

Purpose: *This study assessed the clinical competencies in vital signs monitoring among BSN students at Isra University, Hyderabad.*

Design/Methodology/Approach: *This cross-sectional study was conducted from July to September 2024 at Isra School of Nursing, Isra University Hyderabad with 80 BSN students using non-probability convenience sampling. Data was collected through a validated questionnaire. Data was analyzed using descriptive statistics using IBM SPSS version 23.*

Results: *The majority of participants were females (87.5%) and 57.5% of them were aged 20 –25 years. Most respondents agreed on the importance of routine vital signs assessments, especially respiration rate and SpO2 as early indicators of respiratory issues. However, concerns about time constraints and the potential for neglecting proper monitoring were common.*

Conclusion: *The findings showed that the BSN students have good knowledge and positive attitude toward vital signs monitoring; however, the skills aspect indicates a poor performance in accurate assessment and interpretation of the vital signs. To close the gaps, improving hands-on training and raising the time students spend in clinical settings so that the levels of efficiency and patient care improve.*

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Introduction

Vital signs are an essential part of the assessment of a client and are invaluable when it comes to monitoring the functioning of the body's respiratory, cardiovascular, endocrine, and neurological systems. These measurements, comprising blood pressure, heart rate, oxygen saturation, temperature, and respiration rate, offer valuable insights into a patient's health. Any increase or decrease in these values means deterioration in health and thus reaffirms the

essence of the processes of checking clients' vital signs in clinical contexts (Jugovic & Simin, 2023). Additionally, nursing students should be able to assess, record, and interpret the client's acuity as a basic clinical competency if early signs of clinical deterioration are to be recognized and managed appropriately. Whenever vital signs alter, these are suggestive of physical decline that if not treated may result in critical and severe complications similar to respiratory arrest, heart failure, or failure of other organs. Early action that is expected to be undertaken based on changes in shocks is highly significant in enhancing positive patient results and avoiding various complications (Fazil et al., 2024). These parameters vary due to factors including age, sex, weight, exercise rate, and health status; it becomes necessary to have standard constant values of each parameter for use in the evaluation of the individual patient. Vital signs are important in the revelation of health conditions and therefore, are not independent of other clinical assessments in any way (Samani & Rattani, 2023). Early Warning Signs or EWS developed by Morgan, Williams, and Wright in 1997 show the significance of vital signs in the early identification of deterioration. EWS systems incorporate physiological monitoring parameters (pulse, respiratory rate, blood pressure, and temperature) to identify patients who are at risk and intervene early. Currently, care transitions are defined as identifying signs of the patient's deterioration and employing relevant care interventions before the patient requires stabilization in the ICU or experiences unexpected death (Mok et al., 2015).

Acknowledging the value of vital signs measurement in determining the status of the patient's health, the reported researches indicate that shortcomings in timing, documentation, or interpretation of the results potentially contribute to lost opportunities for intervention. Lack of monitoring is associated with unmet nursing care needs and failure to identify signals may prompt therapy disruption. This is especially a worry in areas that should respond as fast as possible such as the emergency departments (Abd El-mouty & Abd-Elraouf).

Nurses are primarily involved in monitoring VS and it is therefore noble to understand their existing knowledge and attitude toward implementation of VS monitoring. The data showed that the frequency and accuracy of recording vital signs are observably dependent on factors such as workload, communication, or institutional requirements. It is, therefore, possible to assess the attitudes and knowledge of nursing students as well as their clinical competency in the measurement of vital signs to identify factors that hinder the early identification of deterioration as well as provide appropriate intervention (van Noort et al., 2024). This research seeks to find out the knowledge, attitude, and skill of BSN students at Isra University Hyderabad in monitoring vital signs. Since vital signs are an essential component in the clinical decision-making process it is evident that nursing students must be equipped with the skills, knowledge, and attitude needed for it to offer quality and safe care. Considering such factors, this study aims to determine the possibilities for the development of nursing education and training to improve patient care and safety.

Research Objective

- To analyze the clinical competencies in vital signs monitoring among BSN students at Isra University, Hyderabad, focusing on their knowledge, attitudes, and skills.

Review of Literature

Monitoring vital signs like blood pressure, temperature, pulse rate, respiration rate, and SpO_2 is crucial for detecting warning signs of patient deterioration. These parameters contain critical data on the general health condition of the patient that may indicate his/her clinical

worsening (Weenk et al., 2020). Vital signs monitoring helps healthcare workers not only predict complications, and estimate the patient's prognosis, but also take appropriate interventions when necessary and prevent adverse events, including cardiac arrest or unplanned transfer to ICU (Alghatani et al., 2021). Nonetheless, findings of the studies suggest that due to issues such as time constraints as well as pressure, overload, and workload, these vital signs are inaccurately taken and documented (Alshehry, 2024). However, research shows that despite the recognition of vital signs, they are poorly measured and documented because of factors such as In assessing the efficiency of vital signs, particular attention has been given to SpO_2 and respiratory rate as indicators of respiratory dysfunctions in the early stage. SpO_2 using a pulse oximeter is appreciated more for its continuous and noninvasive tracking of respiratory status in critical care. Therefore, it is a better predictor of hypoxemia than the respiratory rate of patients and may pick early signs of respiratory distress in Acute Respiratory Distress Syndrome (ARDS). arising out of heavy workloads on the healthcare systems)(Alshehry et al., 2021; Jugovic & Simin, 2023). Additionally, it has been found that BP alterations occur before RR and SpO2 changes and so may be used to indicate that a patient's status is worsening; however, BP should not be relied upon in isolation(Gawronski et al., 2022).

Traditionally, nursing students are trained academically on the theory part of monitoring vital signs. However, the findings indicate that, although students possess knowledge about scientific concepts and measurement equipment used in calculating vital signs, they lack adequate knowledge about interpreting abnormal values in clinical work. (Rehman et al., 2023). Nursing students show good knowledge of appropriate values for vital signs while the early imprints of patient status decline like the respiratory rate and oxygen saturation are areas of primary concern (Guillari et al., 2024; Jugovic & Simin, 2023). A study pointed out that these changes present a significant challenge to nursing students in particular because such students usually have minimal insight into the pathophysiology that leads to these changes and the impact they have on the clinical decision-making process. Students might be aware of what is considered a normal rate of respiration, 12-20 breaths per minute, but are unlikely to understand the clinical implication of a slightly raised rate or how this may relate to hypoxemia in a slowly decompensating patient. Some of the knowledge gaps identified have implications for delaying intervention and impact on the patient (Kadhila & Tjomombura, 2023).

The attitudes that nursing students have concerning vital signs assessment directly influence the way they go about it. Only a culture of safety fosters keen attention and early identification of the patients who are worsening. Some research has found that nursing students who consider the measurement of the vital signs of patients important are more likely to notice the abnormal value and take the necessary action to improve clinical outcomes (Alias & Ludin, 2021). On the other hand, some students may perceive monitoring of vital signs as an ordinary or technical procedure that requires no full assessment of the clinical picture (Kharusha et al., 2020). According to Harrison et al. (2020), students showing a positive attitude towards monitoring of vital signs gained more confidence to intervene by using these measurements. On the other hand, the learners who were less active in the learning process did not take appropriate action whenever vascular signs pointed towards a worse state. This underlines the importance of promoting a favorable perception of the importance of assessing vital signs all through the nursing curriculum (Druye et al., 2024; Kadhila & Tjomombura, 2023). While they possess theoretical knowledge, the authors reported that nursing students may have difficulty when it comes to implementing those new concepts in a particular clinical setting. Specific assessment skills that involve care in

assessing the patient's pulse, temperature, blood pressure, respiration rates, and height/weight measurement coupled with documentation are very essential for patient safety. However, it is evidenced in the existing literature that, as much as nursing students possess this understanding, they fail to apply it in practice most of the time this being attributed to poor clinical exposure, practicum time, and over-reliance on technology (Alshehry et al., 2021). Smart technologies like wearable monitoring devices and simulating ability learning can assist the students to have better experiences on when and how to monitor vital signs. Educating nursing students to have positive attitude toward the significance of assessment of the basic vital signs and signs of the clinical deterioration is crucial in enhancing the effectiveness of nursing students' actions in emergent cases.

Research Methodology

Study design and setting: This cross-sectional study was conducted at Isra School of Nursing, Isra University, Hyderabad from July-September 2024.
Study population and Sample size: The population included BSN students. The sample size of 80 was estimated with the help of Raosoft software online, 95% confidence level, and 5% margin of error.
Inclusion and Exclusion Criteria: The study included all BSN students of both genders, who were willing and present during the data collection. Those unwilling or absent were excluded from the study.
Sampling Technique: Non-probability convenience sampling technique.
Research tool: The participants' data was collected using a standardized questionnaire which was validated in previous research studies.
Data analysis: In analyzing the results, descriptive statistics; frequencies, percentages, means, and standard deviations were employed using IBM SPSS Statistics Version 23.

Results

Table 1: Demographic Characteristic of Participants

Demographic Variable	Category	Frequency (n)	Percent (%)
Total Participants		**80**	**100%**
Age in Years	Under 20	25	31.3%
	20-25	46	57.5%
	25-29	8	10.0%
	30 & above	1	1.3%
Gender	Male	10	12.5%
	Female	70	87.5%
Year of Study	First Year	20	25.0%
	Second Year	24	22.5%
	Third Year	26	26.3%
	Final Year	30	26.3%

Table 1 shows the demographic characteristics of the study participants. The majority of participants were female (87.5%) and aged between 20-25 years (57.5%). In terms of academic year distribution, 25.0% were first-year students, 22.5% were second-year, 26.3% were third-year, and 26.3% were final-year students. The age distribution showed that 31.3%

of participants were under 20 years, 10.0% were aged between 25-29 years, and only 1.3% were 30 years and older.

Table 2: Classification of Previous Clinical Experience

Categories	Frequency (n)	Percent (%)
None	18	22.5%
Limited	41	51.3%
Moderate	16	20.0%
Extensive	5	6.3%
Total	**80**	**100.0**

Table 2 shows the classification of participants' previous clinical experience. The majority of students reported having limited clinical experience (51.3%), while 22.5% had no prior clinical experience. Additionally, 20.0% had moderate clinical experience, and 6.3% had extensive clinical experience.

Table No: 3 Knowledge, Attitude and Skills of the Participants

STATEMENT		SA	A	N	DA	SD	Mean	St: Devi.
During routine vital sign assessments, the respiration rate of stable patients is frequently assessed.	Freq	33	38	3	3	3	1.81	.955
	%	41.3	47.5	3.8	3.8	3.8		
Compared to respiratory rate, SpO2 may be a more precise early indicator of respiratory problems.	Freq	18	49	8	3	2	2.02	.841
	%	22.5	61.3	10.0	3.8	2.5		
The first vital sign to change as a patient's condition deteriorates is frequently their blood pressure.	Freq	18	43	12	4	4	2.13	.951
	%	22.5	53.8	15.0	5.0	5.0		
Manually counting breathing rates may become unnecessary if SpO2 levels are monitored using pulse oximetry.	Freq	24	39	8	6	6	2.06	1.02
	%	30.0	48.8	10.0	7.5	7.5		
Vital sign monitoring might take an extensive amount of time.	Freq	20	36	11	10	10	2.25	1.08
	%	25.0	45.0	13.8	12.5	12.5		
Respiratory rate represent the least important measure of a patient's decline?	Freq	18	43	10	8	8	2.13	.924
	22.5	53.8	12.5	10.0	1.3	100.		
Monitoring vital signs with an electronic device might become as simple as measuring the breathing rate.	Freq	20	41	8	8	8	2.16	1.03
	%	25.0	51.3	10.0	10.0	10.0		
Monitoring vital signs is a monotonous process.	Freq	18	26	9	26	26	2.57	1.19
	%	22.5	32.5	11.3	32.5	32.5		
I am able to relate the physiology and pathophysiology of the illness the patient is exhibiting to the vital sign readings.	Freq	18	42	12	6	6	2.15	.942
	%	22.5	52.5	15.0	7.5	7.5		
If the SpO2 is within the normal range, I usually record respiration rates between 12 and 20 breaths the minute.	Freq	19	42	7	10	10	2.25	1.38
	%	23.8	52.5	8.8	12.5	1.3		
Proper and correct vital sign monitoring can be neglected due to time constraints.	Freq	12	35	19	12	12	2.46	1.00
	%	15.0	43.8	23.8	15.0	15.0		
Sometimes nurses misinterpret vital sign changes, which causes delays or prevents required actions.	Freq	24	38	9	6	6	2.07	1.02
	%	30.0	47.5	11.3	7.5	7.5		
I shall constantly report any changes in the patient's vital signs to the responsible team doctor or registered nurse if prompt action fails to be performed.	Freq	24	41	5	6	6	2.06	1.05
	%	30.0	47.5	11.3	7.5	7.5		

I feel overburdened by the requirement to take the patients' vital signs at various intervals (e.g., hourly, every two hours, every four hours).	Freq	21	37	13	6	6	2.16	1.02
	%	26.3	46.3	16.3	7.5	7.5		
I am comfortable reporting declining vital signs in a way that encourages physician or registered nurse to examine the patient.	Freq	20	45	6	7	7	2.15	1.34
	%	25.0	56.3	7.5	8.8	8.8		
I have limited ability to read vital signs and identify symptoms of clinical deterioration.	Freq	18	42	10	6	6	2.20	1.03
	%	22.5	52.5	12.5	7.5	5.0		

Table 3 results confirm that respondents have a high level of agreement with the assertion that respiratory rate is checked in stable individuals and the mean score of 1.81 suggests there is a widespread understanding of how often the practice is done. Regarding SpO_2 only 16.2% of respondents have a higher mean, 2.97, of believing that respiratory rate is more accurate than SpO_2 in identifying early signs of respiratory problems. Also, 76.3% of the participants agree that constant check of SpO_2 through pulse oximetry could replace counting of respiratory rates. While a large number of respondents acknowledge that vital signs are essential, a fair number of them deem that monitoring takes too much time and consider respiratory rate as a less significant sign of the patient's worsening situation. Insufficient time and repetitive assessments were mentioned as factors that hampered accurate monitoring.

Discussion

The findings of this study indicate that BSN students at Isra University exhibit good foundational knowledge of vital signs monitoring, with 87.5% of participants demonstrating awareness of the importance of this skill in clinical practice. However, their practical skills, particularly in measuring and interpreting vital signs accurately, need improvement. Said et al. (2023) obtained similar results, that found that while nursing students had a strong theoretical understanding of vital signs, their clinical skills were less proficient in actual healthcare settings(Alshehry et al., 2021). This study revealed that 45% of participants expressed concern over the time-consuming nature of vital signs monitoring, aligning with the results from(Gillan et al., 2022), who identified time constraints as a barrier to effective vital signs monitoring in nursing students. Moreover, despite a positive attitude towards monitoring, 32.5% of participants reported feeling overwhelmed by the frequent collection of vital signs, echoing (Alshehry et al., 2021; Gillan et al., 2022) who also noted stress as a factor limiting students' ability to perform these tasks efficiently. In terms of knowledge, most students recognized the importance of early detection of vital signs changes, with 53.8% affirming that they could relate vital signs readings to the physiology and pathophysiology of diseases. However, interpretation accuracy was still a challenge, as indicated by 43.8% of participants noting that vital signs monitoring was sometimes neglected due to time constraints. This supports findings from (Lee et al., 2020) who emphasized that increased clinical exposure is crucial for improving students' competency in vital signs interpretation and fostering early intervention skills.

Conclusion

The study concluded that BSN students demonstrated good knowledge and a positive attitude toward monitoring vital signs. However, their clinical skills in measuring and interpreting vital signs in real-world settings were limited. The findings highlight the need for increased hands-on training and clinical exposure to improve competency. Addressing these gaps will better equip students to recognize early signs of patient deterioration and enhance patient care and safety.

Conflict of Interest: No Any
Funding Source: The research is conducted without any funding being provided.
Acknowledgment: I would like to thank my respected principal, Teachers, and respondents for their moral support throughout my study.

References

1. Abd El-mouty, S. M., & Abd-Elraouf, S. E. Raising Knowledge, Attitude Of Specific Education's Students Toward Vital Signs: An Intervention Study.
2. Alghatani, K., Ammar, N., Rezgui, A., & Shaban-Nejad, A. (2021). Predicting intensive care unit length of stay and mortality using patient vital signs: machine learning model development and validation. *JMIR medical informatics*, *9*(5), e21347.
3. Alias, A. L., & Ludin, S. M. (2021). Knowledge, attitudes and practice of nurses in assessing patients using early warning sign (EWS) scoring in a teaching hospital in Kuantan Pahang, Malaysia. *International Journal of Care Scholars*, *4*(Supp1), 48-57.
4. Alshehry, A. S. (2024). Attitude toward vital signs monitoring and its predictors among clinical nurses in Saudi Arabia. *Frontiers in Public Health*, *12*, 1454851.
5. Alshehry, A. S., Cruz, J. P., Bashtawi, M. A., Almutairi, K. O., & Tumala, R. B. (2021). Nursing students' knowledge, competence and attitudes towards vital signs monitoring during clinical practice. *Journal of Clinical Nursing*, *30*(5-6), 664-675.
6. Druye, A. A., Agyare, D. F., Akoto-Buabeng, W., Zutah, J., Offei, F. O., Nabe, B.,…Cobbinah, G. (2024). Healthcare Professionals' Knowledge, Attitudes, and Practices in the Assessment, and Management of Sickle-Cell Disease: A Meta-Aggregative Review. *Diseases*, *12*(7).
7. Fazil, A. W., Hakimi, M., Akrami, K., Akrami, M., & Akrami, F. (2024). Exploring the Role of Social Media in Bridging Gaps and Facilitating Global Communication. *Studies in Media, Journalism and Communications*, *2*(1), 13-21.
8. Gawronski, O., Biagioli, V., Dall'oglio, I., Cecchetti, C., Ferro, F., Tiozzo, E.,…Renzetti, T. (2022). Attitudes and practices towards vital signs monitoring on paediatric wards: cross-validation of the Ped-V scale. *Journal of Pediatric Nursing*, *65*, 98-107.
9. Gillan, P. C., Delaney, L. J., Tutticci, N., & Johnston, S. (2022). Factors influencing nursing students' ability to recognise and respond to simulated patient deterioration: A scoping review. *Nurse Education in Practice*, *62*, 103350.
10. Guillari, A., Sansone, V., Giordano, V., Catone, M., & Rea, T. (2024). Assessing digital health knowledge, attitudes and practices among nurses in Naples: a survey study protocol. *BMJ open*, *14*(6), e081721.
11. Jugovic, K. P., & Simin, D. (2023). NURSING STUDENTSATTITUDES TOWARDS MONITORING PATIENTS'VITAL SIGNS. *Zdravstvena zaštita*, *52*, 9.
12. Kadhila, J. G., & Tjomombura, E. (2023). Knowledge, Attitude and Practice Regarding the Factors and Management of Maternal Mortality Amongst the 2nd Year Degree and Diploma Nursing Students at a University, Windhoek, Namibia. *International Internal Medicine Journal*, *1*(1), 1-11.
13. Kharusha, I. K., Sulaiman, S. S., Samara, A. M., Al-Jabi, S. W., & Zyoud, S. e. H. (2020). Assessment of Knowledge about First Aid Methods, Diagnosis, and Management of Snakebite among Nursing Students: A Cross-Sectional Study from Palestine. *Emergency medicine international*, *2020*(1), 8815632.
14. Lee, W., Kim, M., Kang, Y., Lee, Y.-J., Kim, S. M., Lee, J.,…Park, Y.-S. (2020). Nursing and medical students' perceptions of an interprofessional simulation-based education: a qualitative descriptive study. *Korean Journal of Medical Education*, *32*(4), 317.
15. Mok, W., Wang, W., Cooper, S., Ang, E. N. K., & Liaw, S. Y. (2015). Attitudes towards vital signs monitoring in the detection of clinical deterioration: scale development and survey of ward nurses. *International Journal for Quality in Health Care*, *27*(3), 207-213.
16. Rehman, I., Yousaf, R., Aslam, S., Naeem, U., Waheed, M. A., & Naeem, A. (2023). Assessment of Knowledge, Attitude and Practices of Oxygen Therapy among Health Care Professionals: Knowledge of Oxygen Therapy. *Pakistan Journal of Health Sciences*, 33-38.

17. Samani, S., & Rattani, S. A. (2023). Recognizing Early Warning Signs (EWS) in patients is critically important. *Open Journal of Nursing*, *13*(1), 53.
18. van Noort, H. H., Becking-Verhaar, F. L., Bahlman-van Ooijen, W., Pel, M., van Goor, H., & Huisman-de Waal, G. (2024). Three Years of Continuous Vital Signs Monitoring on the General Surgical Ward: Is It Sustainable? A Qualitative Study. *Journal of Clinical Medicine*, *13*(2), 439.
19. Weenk, M., Bredie, S. J., Koeneman, M., Hesselink, G., van Goor, H., & van de Belt, T. H. (2020). Continuous monitoring of vital signs in the general ward using wearable devices: randomized controlled trial. *Journal of medical Internet research*, *22*(6), e15471.